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Screening

# Validity and utility of screening tests for STIs

**H Ward, J Weber**

## Implications for STI control

The two key parameters in defining the utility of a screening test are its sensitivity and specificity. Sensitivity is the ability of the test to correctly identify individuals with the condition; specificity is the ability to correctly identify those without. There is usually a trade off between the two. For a screening test the priority is usually to identify all those with early or asymptomatic disease at the expense of including some false positives. This way those with a negative screening test can be told with some confidence that they are not affected, and those who screen positive can be further investigated through a diagnostic test with higher sensitivity to exclude the false positives. This traditional teaching relates to programmes to detect early stages of chronic disease such as cancers and cardiovascular disease.[1]

In STIs, screening has an expanded role. The aim is not only to identify individuals with asymptomatic disease in order to treat and reduce sequelae, it is also to reduce transmission and contribute to STI control.

Recent developments in nucleic acid amplification techniques have revolutionised diagnostics in, for example, chlamydia screening. These have the capacity to detect tiny numbers of organisms using less invasive sampling techniques.[2] This has led to an expanded gold standard compared with the earlier norm of culture, making older tests appear even less sensitive in comparison. There is pressure to base any expanded screening programme on the most sensitive tests available.

However, effectiveness of a screening programme is not based only upon the validity of individual results. It is also based on the coverage of the relevant population and on the ability to rapidly and effectively treat those who are infected in order to break the chain of transmission. One strategy for doing this is to develop tests that can be carried out rapidly with results given to the patient at the same consultation. There have been major advances in the past decade in developing such point of care (POC) tests, but almost invariably they have a lower sensitivity than the ever expanding gold standard. This means that many programme managers dismiss POC tests as inappropriate. This may be short sighted. Using tests that require laboratory support usually means that patients have to return for their results, introducing a delay of 1–2 weeks before treatment can be initiated allowing time for further transmission. In addition, some patients remain untreated as they do not return and cannot be traced. A test with an immediate result would overcome these two problems. This has been called the rapid test paradox, in which a lower rate of detection leads to more cases being treated.[3] Screening for an infectious agent can thus be thought of as similar to vaccine programmes, where population immunity is a key factor in addition to individual vaccine efficacy.

> In STIs screening has an expanded role…to reduce transmission and contribute to STI control

In a very useful contribution to this debate in this issue of *STI*, Vickerman and colleagues (p 363) report results of a modelling exercise to look at the sensitivity requirements of POC tests in relation to their potential impact on STI control.[4] They use data from various populations in Africa and in the United Kingdom to inform the model, and show that a test with a relatively low sensitivity can still make a significant contribution to STI control in situations where, for example, only 80% of women return for treatment and 50% of those infected transmit to a partner during the treatment delay.

The authors are particularly interested in the implications for STI control in resource poor settings, where laboratory facilities are limited and cheap POC tests could be a useful addition to the limitations of current syndromic management approaches. But this should not be dismissed as irrelevant for wealthier countries with good laboratory facilities. In a recent study of opportunistic chlamydia screening in young people in London, with a prevalence of 10.6%, only 76% of those with a positive or equivocal result returned for treatment.[5]

In mobile and hard to reach groups such as tourists, sex workers, and refugees there would be added advantages to using rapid tests. Less is known about whether a test with immediate results would be more acceptable to those who are being screened, but given the increasing popularity of instant access to information and services, it seems likely to have a widespread appeal.

Once again in the field of STI control we may be facing a conflict between the population or public health perspective, where coverage and rapid treatment is the key, and the individual or clinical perspective, where a high level of validity is paramount.

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